

AUTOMOTIVE TECHNOLOGY

(CIP: 47.0604)

Occupational Skills

The Student demonstrates the specified level of competency in occupational skills:

0	1	2	3	4
No Exposure	Introduced	Practiced	Entry-level	Competency

ENGINE PERFORMANCE

0 1 2 3 4

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|--------------|-----------|---|
| 00000 | A. | General Engine Diagnosis
(Vermont Standards: 2.1, 2.3, 7.6, 7.10, 7.19) |
| 00000 | B. | Ignition System
(Vermont Standards: 2.1, 2.3, 7.6, 7.10, 7.19) |
| 00000 | C. | Fuel and Exhaust Systems
(Vermont Standards: 2.1, 2.3, 7.6, 7.10, 7.19) |

SUSPENSION

- | | | |
|--------------|-----------|---|
| 00000 | A. | Steering Systems
(Vermont Standards: 2.1, 2.2, 7.1, 7.3, 7.7, 7.10, 7.12, 7.15, 7.16) |
| 00000 | B. | Front Suspensions
(Vermont Standards: 2.1, 2.2, 7.1, 7.3, 7.7, 7.10, 7.12, 7.15, 7.16) |
| 00000 | C. | Rear Suspensions
(Vermont Standards: 2.1, 2.2, 7.1, 7.3, 7.7, 7.10, 7.12, 7.15, 7.16) |
| 00000 | D. | Miscellaneous Service
(Vermont Standards: 2.1, 2.2, 7.1, 7.3, 7.7, 7.10, 7.12, 7.15, 7.16) |
| 00000 | E. | Wheel Alignment Adjustment
(Vermont Standards: 2.1, 2.2, 7.1, 7.3, 7.7, 7.10, 7.12, 7.15, 7.16) |
| 00000 | F. | Wheel and Tire
(Vermont Standards: 2.1, 2.2, 7.1, 7.3, 7.7, 7.10, 7.12, 7.15, 7.16) |

BRAKES

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|--------------|-----------|---|
| 00000 | A. | Hydraulic System
(Vermont Standards: 7.1, 7.3, 7.7, 7.12, 7.15, 7.16) |
| 00000 | B. | Drum Brake
(Vermont Standards: 7.1, 7.3, 7.7, 7.12, 7.15, 7.16) |

- 00000 C. **Disk Brake**
(Vermont Standards: 7.1, 7.3, 7.7, 7.12, 7.15, 7.16)
- 00000 D. **Power Assist Units**
(Vermont Standards: 7.1, 7.3, 7.7, 7.12, 7.15, 7.16)
- 00000 E. **Other Brake Systems**
(Vermont Standards: 7.1, 7.3, 7.7, 7.12, 7.15, 7.16)

ELECTRICAL SYSTEMS

- 00000 A. **General Electrical Diagnosis**
(Vermont Standards: 1.18, 1.19, 1.22, 2.6, 2.8, 7.1, 7.6)
- 00000 B. **Battery Service**
(Vermont Standards: 1.18, 1.19, 1.22, 2.6, 2.8, 7.1, 7.6)
- 00000 C. **Starting System**
(Vermont Standards: 1.18, 1.19, 1.22, 2.6, 2.8, 7.1, 7.6)
- 00000 D. **Charging System**
(Vermont Standards: 1.18, 1.19, 1.22, 2.6, 2.8, 7.1, 7.6)
- 00000 E. **Head, Parking, Tail, Dash, and Courtesy Lights**
(Vermont Standards: 1.18, 1.19, 1.22, 2.6, 2.8, 7.1, 7.6)
- 00000 F. **Stop, Turn, Hazard, and Back-up Lights**
(Vermont Standards: 1.18, 1.19, 1.22, 2.6, 2.8, 7.1, 7.6)
- 00000 G. **Gauges, Warning Devices, and Driver Information**
(Vermont Standards: 1.18, 1.19, 1.22, 2.6, 2.8, 7.1, 7.6)
- 00000 H. **Horn and Wiper/Windshield**
(Vermont Standards: 1.18, 1.19, 1.22, 2.6, 2.8, 7.1, 7.6)

DIRECTIONS

Evaluate the student by checking the appropriate box to indicate the degree of competency. The rating for each competency should reflect **employability readiness** rather than the grades given in class.

Rating Scale:

0 No Exposure

1 Introduced – The student has been exposed through non-participation instruction (e. g., lecture, demonstration, field trip, video).

2 Practiced – The student can perform the task with direct supervision.

3 Entry-level Competency – The student can perform the task with limited supervision and/or does not perform the task to standard (a typical entry-level performance expectation)

4 Competency – The student consistently performs task to standard with no supervision (on at least two occasions or at instructor's option)

AUTOMOTIVE TECHNOLOGY

SAFETY

0 1 2 3 4

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A. PRACTICE WORK PLACE SAFETY

*A.001 Define specific safety terms.

*A.002 Demonstrate the use of proper clothing, safety glasses, aprons, shields, and other safety equipment.

*A.003 Demonstrate knowledge of appropriate fire safety practices.

*A.004 Demonstrate knowledge of appropriate first aid procedures.

*A.005 Demonstrate knowledge of hazardous material handling and disposal procedures, according to state and federal regulations.

*A.006 Prepare a list of shop safety rules for an auto repair shop.

*A.007 Recognize any unsafe working conditions and report them to the supervisor, understanding ethical and safety issues involved.

ENGINE PERFORMANCE

0 1 2 3 4

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A. GENERAL ENGINE DIAGNOSIS

*A. 1 Interpret and verify complaint; determine needed repairs. P-1

*A. 2 Inspect engine assembly for fuel, oil, coolant, and other leaks; determine needed repairs. P-2

*A. 3 Diagnose unusual engine noise or vibration problems; determine needed repairs. P-2

*A. 4 Diagnose unusual exhaust color, order, and sound; determine needed action. P-2

- *A. 5 Perform engine absolute (vacuum/boost) manifold pressure P-1
tests; determine needed repairs.
- *A. 6 Perform cylinder power balance test; determine needed action. P-1
- *A. 7 Perform cylinder compression test; determine needed action. P-1
- *A. 8 Perform cylinder leakage test; determine needed action. P-1
- *A. 9 Diagnose engine mechanical, electrical, electronic, fuel, and P-1
ignition problems with an oscilloscope and engine diagnostic
equipment; determine needed action.
- *A.10 Prepare 4 or 5 gas analyzer; inspect and prepare vehicle for
P-1
test and obtain exhaust readings; interpret readings and
determine needed action.

“ “ “ “ B.

IGNITION SYSTEM

- *B. 1 Diagnose no-starting, driveability, and emissions problems on P-1
vehicles with electronic ignition (distributorless) systems;
determine needed repairs.
- *B. 2 Diagnose no-starting, driveability, and emissions problems P-1
on vehicles with distributor ignition (DI) systems; determine
needed repairs.
- *B. 3 Inspect and test ignition primary circuit wiring and P-2
components; repair or replace as needed.
- *B. 4 Inspect and test distributor; service as needed. P-2
- *B. 5 Inspect and test ignition system secondary circuit wiring and P-2
components; replace as needed.
- *B. 6 Inspect and test ignition coil(s); replace as needed. P-2
- *B. 7 Check and adjust (where applicable) ignition system timing P-1
and timing advance/retard.
- *B. 8 Inspect and test ignition wiring harness and connectors; P-2
replace as needed.
- *B. 9 Inspect and test ignition system pick-up sensor or triggering P-2

devices; replace as needed.

- *B.10 Inspect and test ignition control module; replace as needed.
P-2

“ “ “ “ C. FUEL AND EXHAUST SYSTEMS

- *C. 1 Diagnose hot or cold no-starting, hard starting, poor driveability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, dieseling, and emissions problems on vehicles with carburetor-type fuel systems; determine needed action. P-3
- *C. 2 Diagnose hot or cold no-starting, hard starting, poor driveability, incorrect idle speed, poor idle, flooding, hesitation, surging, engine misfire, power loss, stalling, poor mileage, dieseling, and emissions problems on vehicles with injection-type fuel systems; determine needed action. P-1
- *C. 3 Inspect fuel tank and fuel cap; inspect and replace fuel lines, fittings, and hoses. P-2
- *C. 4 Check fuel for contaminants and quality. P-2
- *C. 5 Inspect and test mechanical and electrical fuel pumps and pump control systems; replace as needed. P-2
- *C. 6 Replace fuel filters. P-1
- *C. 7 Inspect and test fuel pressure regulation system and components of injection-type fuel systems; adjust or replace as needed. P-2
- *C. 8 Inspect and test cold enrichment system components; adjust or replace as needed. P-2
- *C. 9 Remove, clean, and reinstall throttle body; adjust related linkages. P-2
- *C.10 Inspect and test fuel injectors; clean and replace. P-2
- *C.11 Inspect throttle body mounting plates, air induction and filtration system, intake manifold, and gaskets; clean or replace as needed. P-2

- *C.12 Check/adjust idle speed and fuel mixture where applicable.
P-2
- *C.13 Remove, inspect, and test vacuum and electrical components and connections of fuel system; repair or replace as needed. P-2
- *C.14 Inspect exhaust manifold, exhaust pipes, mufflers, resonators, tail pipes, and heat shields; repair or replace as needed. P-2
- *C.15 Perform exhaust system back-pressure test; determine needed action. P-2
- *C.16 Test the operation of turbocharger/supercharger systems; determine needed action. P-3
- *C.17 Remove, clean, inspect, and repair or replace turbocharger/supercharger system components. P-3
- *C.18 Identify the causes of turbocharger/supercharger failure; determine needed action. P-3

SUSPENSION

“ “ “ “ A. STEERING SYSTEMS

- *A. 1 Disable supplemental restraint system (SRS) in accordance with manufacturer's procedures. P-1
- *A. 2 Diagnose steering column noises, looseness, and binding problems (including tilt mechanisms); determine needed repairs. P-3
- *A. 3 Diagnose power non-rack and pinion steering gear binding, uneven turning effort, looseness, hard steering, and fluid leakage problems; determine needed repairs. P-3
- *A. 4 Diagnose power rack and pinion steering gear vibration, looseness, and hard steering problems; determine needed repairs. P-2
- *A. 5 Inspect and replace steering shaft universal-joint(s), flexible coupling(s), collapsible column, lock cylinder mechanism, and steering wheel. P-2
- *A. 6 Adjust manual or power non-rack and pinion worm bearing preload and sector lash. P-3
- *A. 7 Remove and replace manual or power rack and pinion steering gear; inspect mounting bushings and brackets. P-2
- *A. 8 Disassemble, inspect, repair, and reassemble rack and pinion steering gear. P-3

*A. 9	Adjust manual or power rack and pinion steering gear.	P-3
*A.10	Inspect and replace manual or power rack and pinion steering gear inner tie rod ends (sockets) and bellows boots.	P-2
*A.11	Inspect manual and power steering fluid levels and condition.	P-1
*A.12	Flush, fill, and bleed power steering system.	P-2
*A.13	Diagnose power steering fluid leakage; determine needed repairs.	P-2
*A.14	Inspect, replace, and adjust power steering pump belt.	P-1
*A.15	Remove, inspect, and replace power steering pump, pump mounts, pump seals, and gaskets.	P-3
*A.16	Remove, inspect, and replace power steering pump pulley; check alignment.	P-3
*A.17	Perform power steering system pressure test; determine needed repairs.	P-2
*A.18	Inspect and replace power steering hoses and fittings.	P-2
*A.19	Inspect and replace pitman arm, relay (centerlink/intermediate) rod, idler arm and mountings, and steering linkage damper.	P-3
*A.20	Inspect, replace, and adjust tie rod ends (sockets), tie rod sleeves, and clamps.	P-2
*A.21	Diagnose, inspect, adjust, repair or replace components of electronically-controlled steering systems.	P-3
*A.22	Diagnose, inspect, repair or replace components of variable-assist steering systems.	P-3

“ “ “ “ **B. FRONT SUSPENSIONS**

*B. 1	Diagnose short and long arm suspension system noises, body sway, and uneven riding height problems; determine needed repairs.	P-2
*B. 2	Diagnose MacPherson strut suspension system noises, body sway, and uneven riding height problems; determine needed repairs.	P-2
*B. 3	Remove, inspect, and replace upper and lower control arms, bushings, shafts, and rebound bumpers.	P-2

- *B. 4 Remove, inspect, replace, and adjust strut (compression/tension) rods and bushings. P-2
- *B. 5 Remove, inspect, and replace upper and lower ball joints on short and long arm suspension systems. P-2
- *B. 6 Remove, inspect, and replace steering knuckle assemblies. P-2
- *B. 7 Remove, inspect, and replace short and long arm suspension system coil springs and spring insulators. P-2
- *B. 8 Remove, inspect, replace, and adjust suspension system torsion bars; inspect mounts. P-3
- *B. 9 Remove, inspect, and replace stabilizer bar bushings, brackets, and links. P-3
- *B.10 Remove, inspect, and replace ball joints on MacPherson strut suspension systems. P-2
- *B.11 Remove, inspect, and replace MacPherson strut cartridge or assembly, strut coil spring, insulators, and upper strut bearing mount. P-1
- *B.12 Lubricate suspension and steering systems. P-2

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C. REAR SUSPENSIONS

- *C. 1 Remove, inspect, and replace coil springs and spring insulators. P-2
- *C. 2 Remove, inspect, and replace transverse links, control arms, bushings, and mounts. P-2
- *C. 3 Remove, inspect, and replace leaf springs, leaf spring insulators shackles, brackets, bushings, and mounts. P-3 (silencers),
- *C. 4 Remove, inspect, and replace MacPherson strut cartridge or assembly, strut coil spring, and insulators (silencers P-2

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D. MISCELLANEOUS SERVICE

- *D. 1 Inspect, remove, and replace shock absorbers. P-2
- *D. 2 Remove, inspect, and service or replace front and rear wheel bearings. P-1
- *D. 3 Diagnose, inspect, adjust, repair or replace components of electronically-controlled suspension systems. P-3

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E. WHEEL ALIGNMENT ADJUSTMENT

*E. 1	Diagnose vehicle wander, drift, pull, hard steering, bump steer, memory steer, torque steer, and steering return problems; determine needed repairs.	P-1
*E. 2	Measure vehicle riding height; determine needed repairs.	P-2
*E. 3	Check and adjust front and rear wheel camber; determine needed repairs.	P-2
*E. 4	Check and adjust caster; determine needed repairs.	P-2
*E. 5	Check and adjust front wheel toe; adjust as needed.	P-2
*E. 6	Center steering wheel.	P-2
*E. 7	Check toe-out-on-turns (turning radius); determine needed repairs.	P-2
*E. 8	Check SAI (steering axis inclination) and included angle; determine needed repairs.	P-2
*E. 9	Check and adjust rear wheel toe.	P-2
*E. 10	Check rear wheel thrust angle; determine needed repairs.	P-2
*E. 11	Check for front wheel setback; determine needed repairs.	P-2
*E. 12	Check front cradle (subframe) alignment; determine needed repairs.	P-3

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F. WHEEL AND TIRE

*F. 1	Diagnose tire wear patterns; determine needed repairs.	P-1
*F. 2	Inspect tires; check and adjust air pressure.	P-1
*F. 3	Diagnose wheel/tire vibration, shimmy, and noise problems; determine needed repairs.	P-2
*F. 4	Rotate tires according to manufacturer's recommendations.	P-1
*F. 5	Measure wheel, tire, axle, and hub runout; determine needed repairs.	P-2
*F. 6	Diagnose tire pull (lead) problem; determine corrective actions.	P-2
*F. 7	Balance wheel and tire assembly (static and dynamic).	P-1

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| *F. 8 | Dismount, inspect, repair, and remount tire on wheel. | P-2 |
| *F. 9 | Reinstall wheel; torque lug nuts. | P-1 |

BRAKES

“ “ “ “ “ A. HYDRAULIC SYSTEM

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|-------|---|-----|
| *A. 1 | Measure and adjust pedal pushrod length and pedal height. | P-3 |
| *A. 2 | Check master cylinder for internal and external leaks and proper operation; determine needed repairs. | P-2 |
| *A. 3 | Remove, bench bleed, and replace master cylinder. | P-2 |
| *A. 4 | Diagnose poor stopping, pulling or dragging caused by problems in the hydraulic system; determine needed repairs. | P-1 |
| *A. 5 | Inspect brake lines and fittings for leaks, dents, kinks, rust, cracks or wear; tighten loose fittings and supports. | P-2 |
| *A. 6 | Inspect flexible brake hoses for leaks, kinks, cracks, bulging or wear; tighten loose fittings and supports. | P-2 |
| *A. 7 | Fabricate and install brake lines (double flare and ISO types); replace hoses, fittings, and supports as needed. | P-2 |
| *A. 8 | Select, handle, store, and install brake fluids to proper level. | P-1 |
| *A. 9 | Inspect, test, and replace metering (hold-off), proportioning (balance), pressure differential, and combination valves. | P-2 |
| *A.10 | Inspect, test, replace, and adjust height (load) sensing proportioning valve. | P-3 |
| *A.11 | Inspect, test, and replace components of brake warning light system. | P-2 |
| *A.12 | Bleed (manual, pressure, vacuum or surge) brake system; flush hydraulic system. | P-1 |

“ “ “ “ “ B. DRUM BRAKE

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|-------|---|-----|
| *B. 1 | Diagnose poor stopping, noise, pulling, grabbing, dragging or pedal pulsation problems; determine needed repairs. | P-1 |
| *B. 2 | Remove, clean (using proper safety procedures), inspect, and measure brake drums; service or replace as needed. | P-1 |
| *B. 3 | Mount brake drum on lathe; machine braking surface. | P-2 |

*B. 4	Remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates; lubricate and reassemble.	P-2
*B. 5	Remove and reinstall wheel cylinders.	P-2
*B. 6	Pre-adjust brake shoes and parking brake before installing brake drums or drum/hub assemblies and wheel bearings.	P-2
*B. 7	Reinstall wheel, torque lug nuts, and make final checks and adjustments.	P-1

“ “ “ “ “ **C. DISC BRAKE**

*C. 1	Diagnose poor stopping, noise, pulling, grabbing, dragging or pedal pulsation caused problems; determine needed repairs.	P-1
*C. 2	Remove caliper assembly from mountings; clean and inspect for leaks and damage to caliper housing.	P-2
*C. 3	Clean and inspect caliper mounting and slides for wear and damage.	P-2
*C. 4	Remove, clean, and inspect pads and retaining hardware; determine needed service.	P-2
*C. 5	Disassemble and clean caliper assembly; inspect parts for wear, rust, scoring, and damage; replace seal, boot, and damaged or worn parts.	P-2
*C. 6	Reassemble, lubricate, and reinstall caliper, pads, and related hardware.	P-2
*C. 7	Clean, inspect, and measure rotor with a dial indicator and micrometer; follow manufacturer's recommendations in determining need to machine or replace.	P-1
*C. 8	Refinish rotor according to manufacturer's recommendations.	P-2
*C. 9	Adjust calipers with integrated parking brake system.	P-3
*C.10	Fill master cylinder with recommended fluid and seat pads; inspect caliper for leaks.	P-1
*C.11	Reinstall wheel, torque lug nuts, and make final checks and adjustments.	P-1
*C.12	Remove and replace rotor.	P-2

“ “ “ “ “ **D. POWER ASSIST UNITS**

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| *D. 1 | Test pedal free travel with and without engine running; check power assist operation. | P-2 |
| *D. 2 | Check vacuum supply (manifold or auxiliary pump) to vacuum -type power booster. | P-2 |
| *D. 3 | Inspect the vacuum-type power booster unit for vacuum leaks; inspect the check valve for proper operation; repair or replace parts as needed. | P-2 |

“ “ “ “ **E. OTHER BRAKE SYSTEMS**

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| *E. 1 | Diagnose wheel bearing noises, wheel shimmy, and vibration problems; determine needed repairs. | P-1 |
| *E. 2 | Remove, clean, inspect, repack, and reinstall wheel bearings and replace seals; reinstall hub and adjust wheel bearings. | P-1 |
| *E. 3 | Check parking brake cables and components for wear, rusting, binding, and corrosion; clean, lubricate, and replace as needed. | P-2 |
| *E. 4 | Check parking brake operation; adjust as needed. | P-1 |
| *E. 5 | Check operation of parking brake indicator light system. | P-2 |
| *E. 6 | Check operation of brake stop light system; adjust and service as needed. | P-1 |
| *E. 7 | Replace wheel bearing and race. | P-1 |

“ “ “ “ **F. ANTI-LOCK BRAKES**

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| *F. 1 | Inspect, test, and service anti-lock brake system (ABS) hydraulic, electrical, and mechanical components. | P-2 |
| *F. 2 | Diagnose poor stopping, wheel lock-up, abnormal pedal feel or pulsation, and noise problems caused by the anti-lock brake system (ABS); determine needed repairs. | P-2 |
| *F. 3 | Observe anti-lock brake system (ABS) warning light(s) at startup; determine if further diagnosis is needed. | P-2 |
| *F. 4 | Diagnose anti-lock brake system (ABS) electronic control(s) and components using self-diagnosis and/or recommended test equipment; determine needed repairs. | P-2 |
| *F. 5 | Depressurize high pressure components of the anti-lock brake system (ABS) following manufacturer's recommendation safety procedures. | P-2 |

*F. 6	Fill the anti-lock brake system (ABS) master cylinder with recommended fluid following manufacturer's procedures; inspect system for leaks.	P-2
*F. 7	Bleed the anti-lock brake system's (ABS) front and rear hydraulic circuits following manufacturer's procedures.	P-2
*F. 8	Perform a fluid pressure (hydraulic boost) diagnosis on the high pressure anti-lock brake system (ABS); determine needed repairs.	P-2
*F. 9	Remove and install anti-lock brake system (ABS) electrical/electronic/hydraulic components following manufacturer's procedures and specifications.	P-3
*F.10	Service, test, and adjust anti-lock brake system (ABS) speed sensors following manufacturer's recommendation procedures.	P-2
*F. 11	Diagnose anti-lock brake system (ABS) braking problems caused by vehicle modifications (tire size, curb height, final drive ratio, etc.).	P-3

ELECTRICAL SYSTEMS

“ “ “ “ “ A. GENERAL ELECTRICAL DIAGNOSIS

*A. 1	Use wiring diagrams during diagnosis of electrical circuit problems.	P-1
*A. 2	Check electrical circuits with a test light; determine needed repairs.	P-2
*A. 3	Check voltage and voltage drop in electrical/electronic circuits using a digital multimeter (DMM); determine needed repairs.	P-1
*A. 4	Check current flow in electrical/electronic circuits and components using an ammeter; determine needed repairs.	P-1
*A. 5	Check electrical circuits using jumper wires; determine needed repairs.	P-2
*A. 6	Find shorts, grounds, opens, and resistance problems in electrical/electronic circuits; determine needed repairs.	P-1
*A. 7	Measure and diagnose the cause(s) of abnormal key-off battery drain; determine needed repairs.	P-1
*A. 8	Inspect and test fusible links, circuit breakers, and fuses; replace as needed.	P-1

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| *A. 9 | Inspect and test switches, connectors, relays, and wires of electrical/electronic circuits; repair or replace as needed. | P-1 |
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“ “ “ “ **B. BATTERY SERVICE**

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| *B. 1 | Perform battery state-of-charge test; determine needed service. | P-1 |
| *B. 2 | Perform battery capacity (load, high-rate discharge) test; determine needed service. | P-1 |
| *B. 3 | Maintain or restore electronic memory functions. | P-2 |
| *B. 4 | Inspect, clean, fill, and replace battery. | P-2 |
| *B. 5 | Perform slow/fast battery charge. | P-2 |
| *B. 6 | Inspect and clean battery cables, connectors, clamps, and hold-downs, repair or replace as needed. | P-1 |
| *B. 7 | Start a vehicle using jumper cables and a battery or auxiliary power supply. | P-1 |

“ “ “ “ **C. STARTING SYSTEM**

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|-------|---|-----|
| *C. 1 | Perform starter current draw and circuit voltage drop test; determine needed repairs. | P-1 |
| *C. 2 | Inspect and test starter relays and solenoids; replace as needed. | P-2 |
| *C. 3 | Remove and replace/reinstall starter. | P-2 |
| *C. 4 | Perform starter bench tests; determine needed repairs. | P-2 |
| *C. 5 | Inspect, test, and repair or replace switches, connectors, and wires of starter control circuits. | P-2 |
| *C. 6 | Disassemble, clean, inspect, and test starter components; replace as needed. | P-3 |

“ “ “ “ **D. CHARGING SYSTEM**

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|-------|--|-----|
| *D. 1 | Diagnose charging system problems that cause an undercharge, a no-charge or an overcharge condition. | P-1 |
| *D. 2 | Inspect and adjust alternator drive belts; replace as needed. | P-1 |
| *D. 3 | Inspect and test voltage regulator; replace as needed. | P-2 |
| *D. 4 | Remove, inspect, and replace/reinstall alternator. | P-2 |

*D. 5 Disassemble, clean, inspect, and test alternator components; replace as needed. P-3

*D. 6 Perform charging circuit voltage drop tests; determine needed repairs. P-2

“ “ “ “ **E. HEAD, PARKING, TAIL, DASH, AND COURTESY LIGHTS**

*E. 1 Diagnose brighter than normal, intermittent, dim or no light operation. P-2

*E. 2 Inspect, replace, and aim headlights and bulbs. P-2

“ “ “ “ **F. STOP, TURN, HAZARD, AND BACK-UP LIGHTS**

*F. 1 Diagnose brighter than normal, intermittent, dim or no light operation. P-2

*F. 2 Inspect and diagnose incorrect stop, turn, hazard, and back up light operation; repair or replace as needed. P-2

“ “ “ “ **G. GAUGES, WARNING DEVICES, AND DRIVER INFORMATION**

*G. 1 Diagnose intermittent, high, low or no gauge readings. P-2

*G. 2 Test gauge circuit voltage regulators (limiters); replace as needed. P-3

*G. 3 Inspect and test gauges and gauge sending units; replace as needed. P-2

*G. 4 Inspect and test connectors, wires, and printed circuit boards of gauge circuits; repair or replace as needed. P-3

*G. 5 Diagnose incorrect operation of warning devices and other driver information systems. P-2

*G. 6 Diagnose intermittent, high, low or no readings on electronic instrument clusters. P-3

*G. 7 Inspect and test sensors, sending units, connectors, and wires of electronic instrument circuits; repair or replace as needed. P-3

“ “ “ “ **H. HORN AND WIPER/WINDSHIELD**

H. 1 Diagnose incorrect horn operation; repair as needed. P-3

H. 2 Diagnose incorrect wiper operation; diagnose wiper speed control and park problems; repair as needed. P-3

H. 3 Diagnose incorrect windshield washer operation; repair as needed.

P-3

Priority Designation

All tasks have a Priority designation.

- Ninety-five percent (95%) of Priority 1 (P-1) items must be taught in the curriculum.
- Eighty percent (80%) of Priority 2 (P-2) items must be taught in the curriculum.
- Fifty percent (50%) of Priority 3 (P-3) items must be taught in the curriculum.